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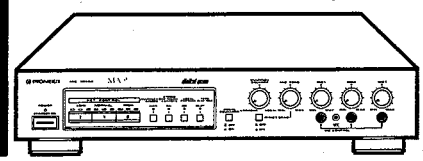
Service Manual



ORDER NO.
ARP2073

MIC MIXER

MA-9

● This manual is applicable to the SD type.

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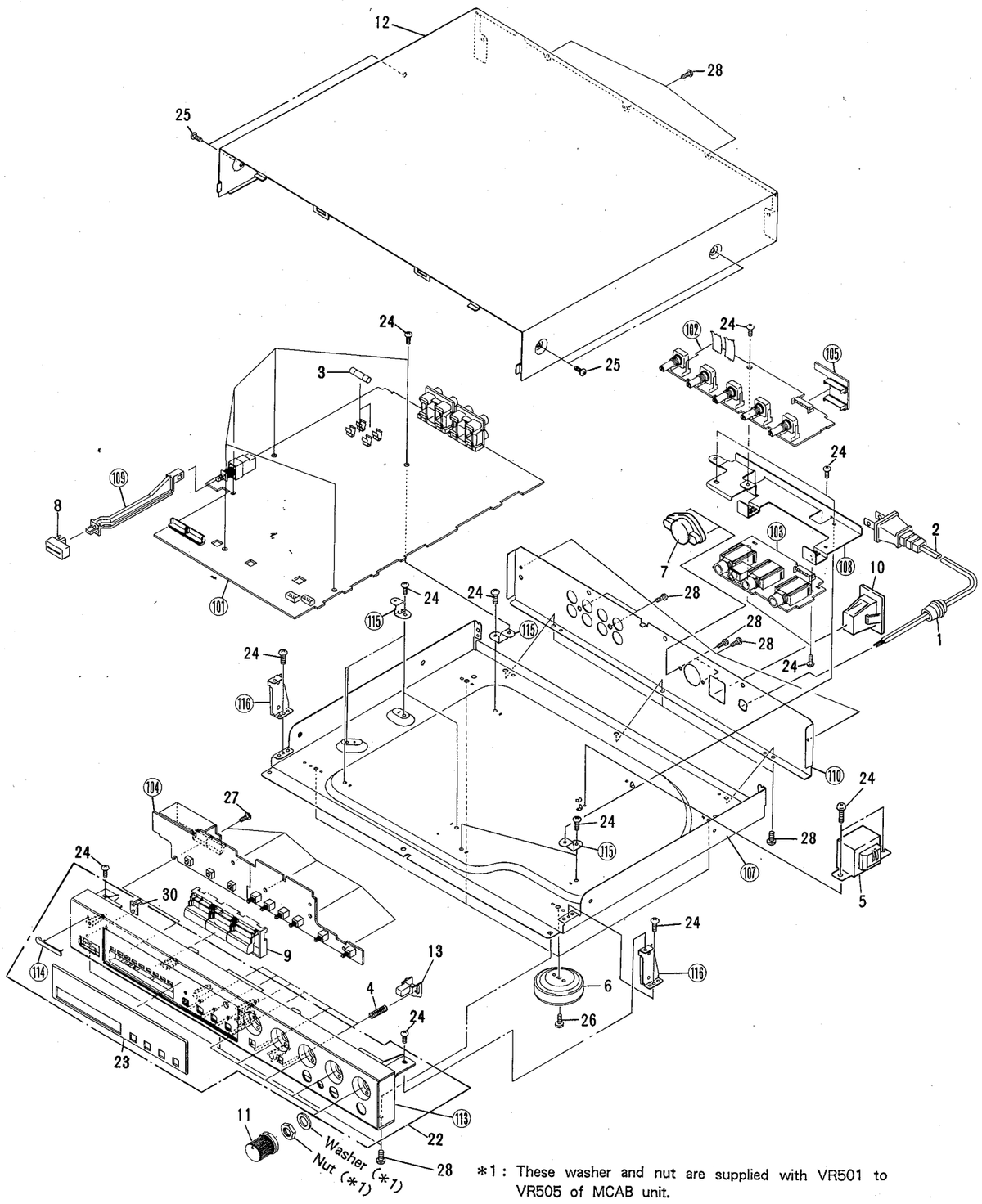
1. EXPLODED VIEW, PACKING AND PARTS LIST

NOTES :

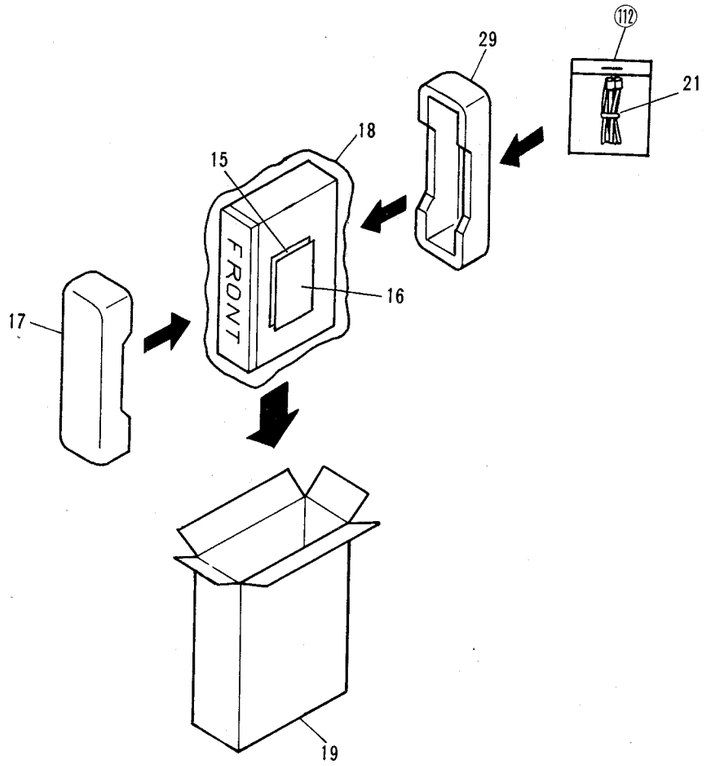
- Parts without part number cannot be supplied.
- The ⚠ mark found on some component parts indicates the impotance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

Mark	No.	Part No.	Description
⚠	1	CM−22B	Strain relief
⚠	2	PDG1013	AC power cord
⚠	3	REK−076	FU101, FU102 400mA Fuse
	4	RBH1144	Spring
⚠	5	RTT1140	Power transformer
	6	VXA1289	Insulator assembly
⚠	7	PSB1002	Voltage selector
	8	PAC1372	Power button
	9	RAC1523	Key control button
⚠	10	AKP−507	AC socket
	11	AAB1063	Rotary knob
	12	PYY1050	Bonnet
	13	RXA1354	Push knob assembly
	14		.....
	15	RRB1071	Operating instructions
	16	RRG1002	Operation guide
	17	RHA1052	Pad (F)
	18	RHC−154	Packing sheet
	19	RHG1207	Packing case
	20		.....
	21	RDE−010	Connection cord
	22	RXX1306	Front panel assembly−S
	23	RAH1711	Display panel
	24	BBZ30P060FMC	Screw
	25	BBZ40P080FZK	Screw
	26	IBZ30P100FMC	Screw
	27	BBZ26P080FMC	Screw
	28	BBZ30P080FZK	Screw
	29	RHA1053	Pad (R)
	30	RNK1377	REC lens

Mark	No.	Part No.	Description
	101		MAIN unit
	102		MCAB unit
	103		MCJB unit
	104		SWLB unit
	105		CNB1 unit
	106		.....
	107		Chassis
	108		P.C.B holder
	109		Power joint
	110		Rear panel
	111		.....
	112		Connection cord assembly
	113		Front panel
	114		Name plate
	115		P.C.B base
	116		Angle



*1 : These washer and nut are supplied with VR501 to VR505 of MCAB unit.



2.

In this

IC101 (

Pin	
Logic	

IC109 (

Pin	
Logic	

IC109 (:

Pin	
Logic	

Correlat:

MPX/s	
MP	
MP	
Ster	
Ster	

IC109 (3

Pin	1
Logic	

IC112 (1

Pin	9,
Logic	

2. IC DESCRIPTIONS

In this section, ICs truth tables are described.

IC101 (NJU4052BD)

Pin	10	9	Mode
Logic	0	0	LINE
	1	0	TAPE

IC109 (1/3), IC110 (1/3) (NJU4053BD)

Pin	11	Switch settings
Logic	L	Pin 12 side
	H	Pin 13 side (through voice cut circuit)

IC109 (2/3), IC110 (2/3) (NJU4053BD)

Pin	9	Switch settings
Logic	L	Pin 5 side
	H	Pin 3 side (through MPX balance circuit)

Correlation between front switch and IC109/IC110

Front switch		IC109 (1/3), (2/3) IC110 (1/3), (2/3)	
MPX/stereo	Stereo one-touch karaoke	Pin 9	Pin 11
MPX	OFF	H	L
MPX	ON	H	L
Stereo	OFF	L	H
Stereo	ON	H	H

IC109 (3/3), IC110 (3/3) (NJU4053BD)

Pin	10	Switch settings	Mode
Logic	L	Pin 2 side	Key controller ON (# or ♭)
	H	Pin 1 side	Key controller OFF (♮)

IC112 (1/2), (2/2) (NJU4053BD)

Pin	9, 10	Switch settings	Mode
Logic	L	Pins 2, 5 side	Power OFF (through)
	H	Pins 1, 3 side	Power ON (various operations)

IC114 (NJU4053BD)

Pin	10,11	Switch settings	Mode
Logic	L	Pins 2, 12 side	TAPE REC ON
	H	Pins 1, 13 side	TAPE REC OFF

IC504 (1/3) (NJU4053BD)

Pin	10	Switch settings	Mode
Logic	L	Pin 2 side	MIC3 echo OFF
	H	Pin 1 side	MIC3 echo ON

IC504 (2/3)

Pin	9	Switch settings	Mode
Logic	L	Pin 5 side	Voice enhancer switch OFF
	H	Pin 3 side	Voice enhancer switch ON

IC504 (3/3)

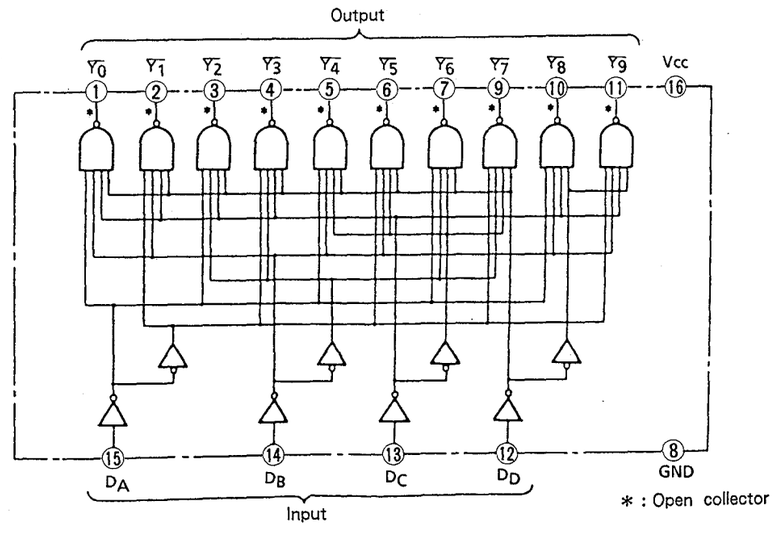
Pin	11	Switch settings	Mode
Logic	L	Pin 12 side	Vocal partner switch OFF
	H	Pin 13 side	Vocal partner switch ON

IC601 (SN74LS145N) : BCD-TO-DECIMAL DECODER/DRIVER

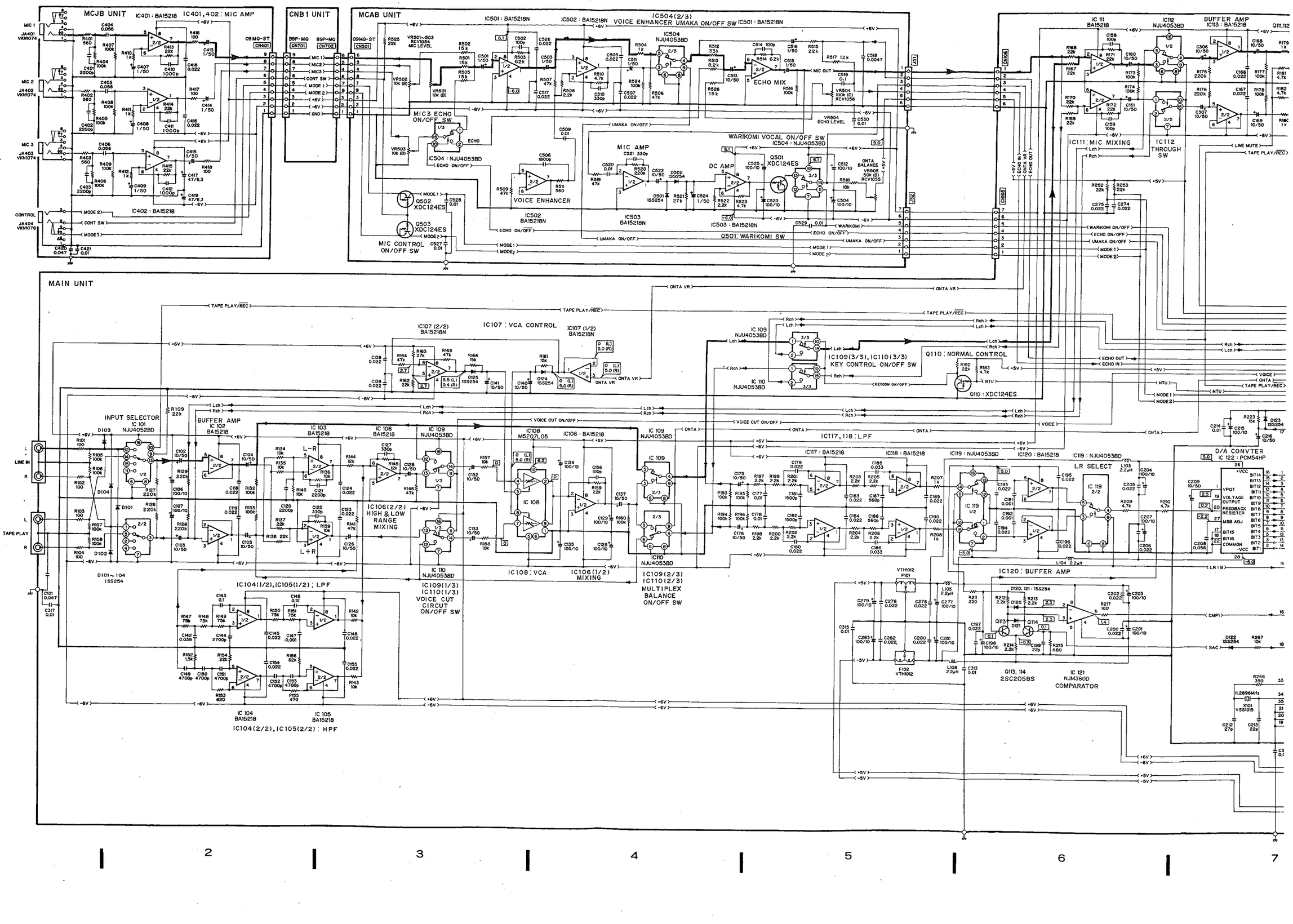
Truth table

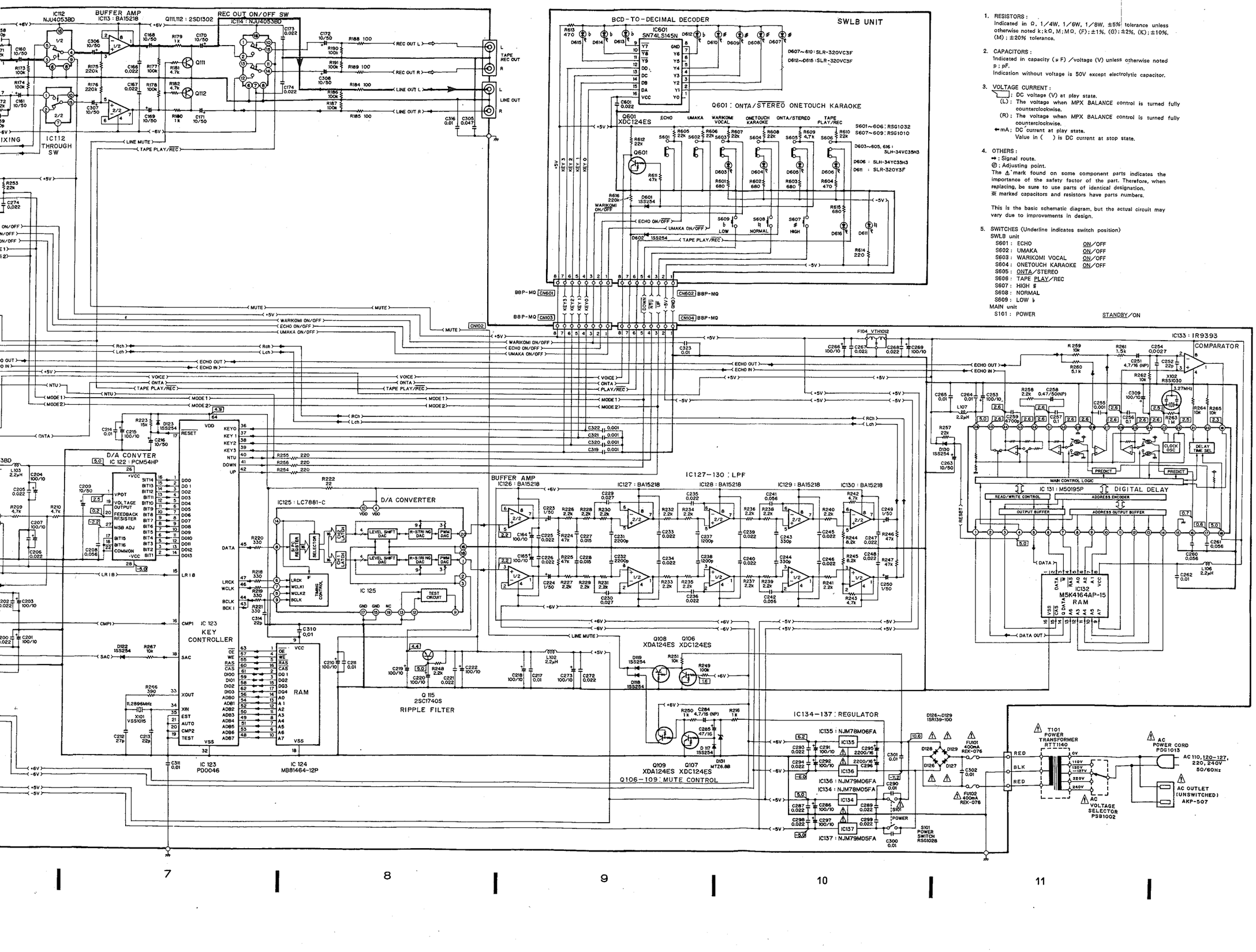
	Input				Output									
	Pin12	Pin13	Pin14	Pin15	Pin1	Pin2	Pin3	Pin4	Pin5	Pin6	Pin7	Pin8	Pin10	Pin11
Decimal	D_D	D_C	D_B	D_A	$\overline{Y_0}$	$\overline{Y_1}$	$\overline{Y_2}$	$\overline{Y_3}$	$\overline{Y_4}$	$\overline{Y_5}$	$\overline{Y_6}$	$\overline{Y_7}$	$\overline{Y_8}$	$\overline{Y_9}$
0	L	L	L	L	L	H	H	H	H	H	H	H	H	H
1	L	L	L	H	H	L	H	H	H	H	H	H	H	H
2	L	L	H	L	H	H	L	H	H	H	H	H	H	H
3	L	L	H	H	H	H	H	L	H	H	H	H	H	H
4	L	H	L	L	H	H	H	H	L	H	H	H	H	H
5	L	H	L	H	H	H	H	H	H	L	H	H	H	H
6	L	H	H	L	H	H	H	H	H	H	L	H	H	H
7	L	H	H	H	H	H	H	H	H	H	H	L	H	H
8	H	L	L	L	H	H	H	H	H	H	H	H	L	H
9	H	L	L	H	H	H	H	H	H	H	H	H	H	L
10	H	L	H	L	H	H	H	H	H	H	H	H	H	H
11	H	L	H	H	H	H	H	H	H	H	H	H	H	H
12	H	H	L	L	H	H	H	H	H	H	H	H	H	H
13	H	H	L	H	H	H	H	H	H	H	H	H	H	H
14	H	H	H	L	H	H	H	H	H	H	H	H	H	H
15	H	H	H	H	H	H	H	H	H	H	H	H	H	H

Logic diagram


Output
$\overline{Y_0}$ $\overline{Y_1}$ $\overline{Y_2}$ $\overline{Y_3}$ $\overline{Y_4}$ $\overline{Y_5}$ $\overline{Y_6}$ $\overline{Y_7}$ $\overline{Y_8}$ $\overline{Y_9}$ Vcc
1 2 3 4 5 6 7 9 10 11 16
15 14 13 12 8
D_A D_B D_C D_D GND
Input
* : Open collector

3. SCHEMATIC DIAGRAM





1. RESISTORS :
   Indicated in Ω, 1/4W, 1/6W, 1/8W, ±5% tolerance unless otherwise noted k ; kΩ, M ; MΩ, (F) : ±1%, (G) : ±2%, (K) : ±10%, (M) : ±20% tolerance.

2. CAPACITORS :
   Indicated in capacity (μF) / voltage (V) unless otherwise noted p ; pF.
   Indication without voltage is 50V except electrolytic capacitor.

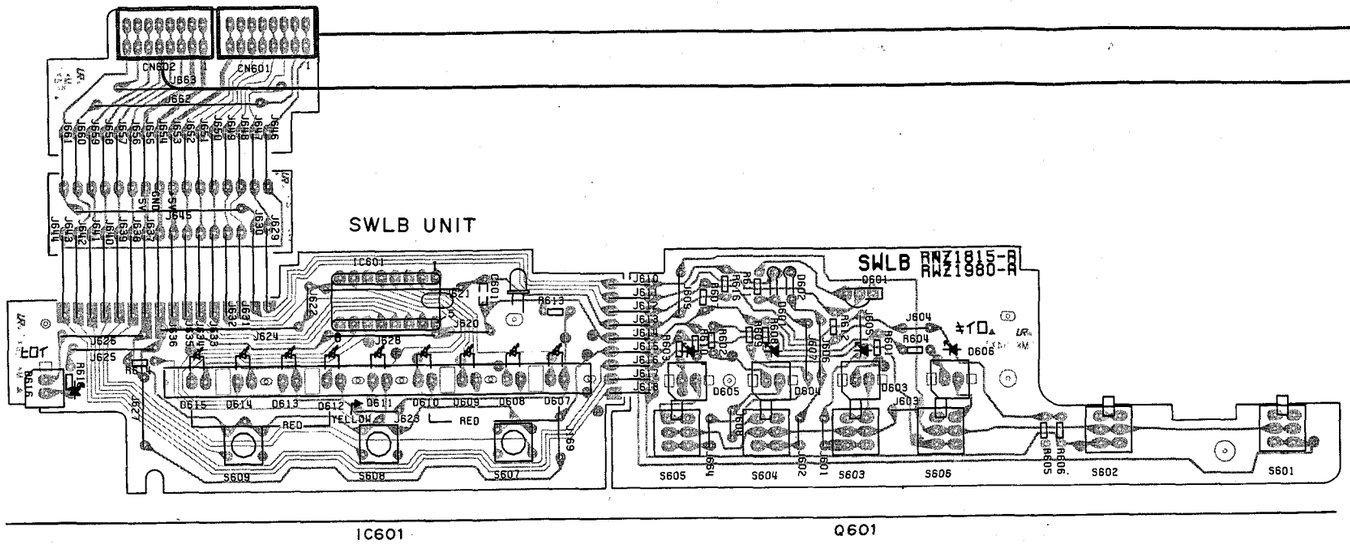
3. VOLTAGE CURRENT :
   [ ] : DC voltage (V) at play state.
   (L) : The voltage when MPX BALANCE control is turned fully counterclockwise.
   (R) : The voltage when MPX BALANCE control is turned fully counterclockwise.
   ⇐mA ; DC current at play state.
   Value in ( ) is DC current at stop state.

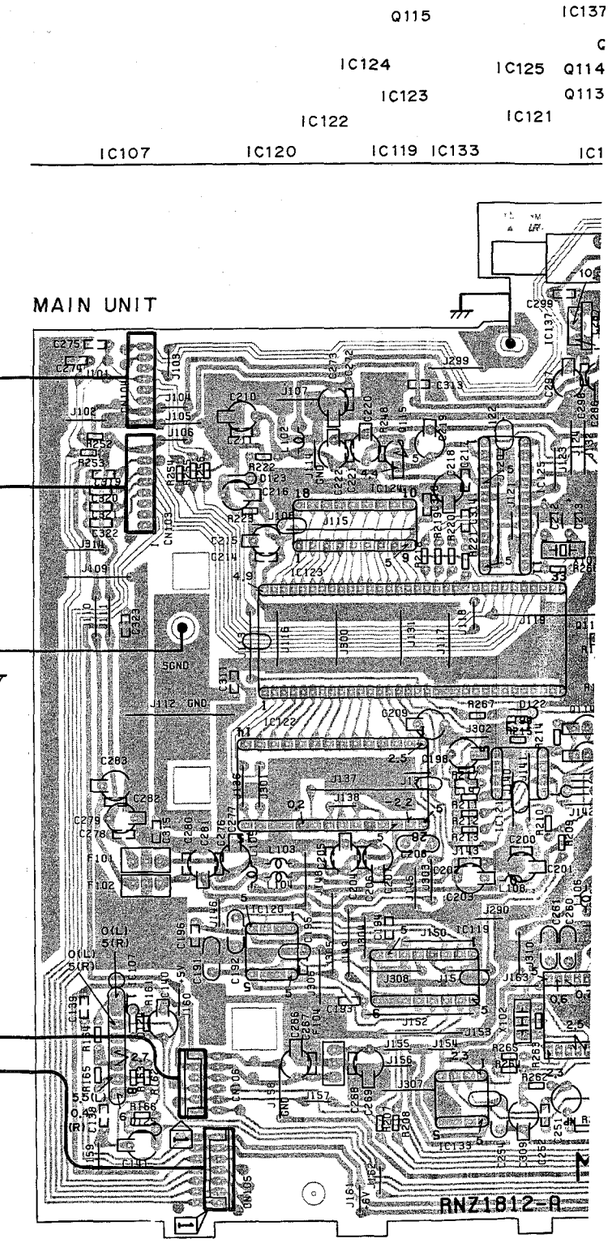
4. OTHERS :
   ➡ : Signal route.
   Ø : Adjusting point.
   The △ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
   ※ marked capacitors and resistors have parts numbers.

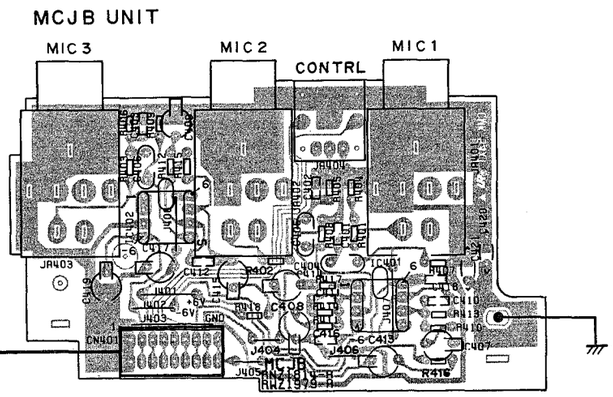
   This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

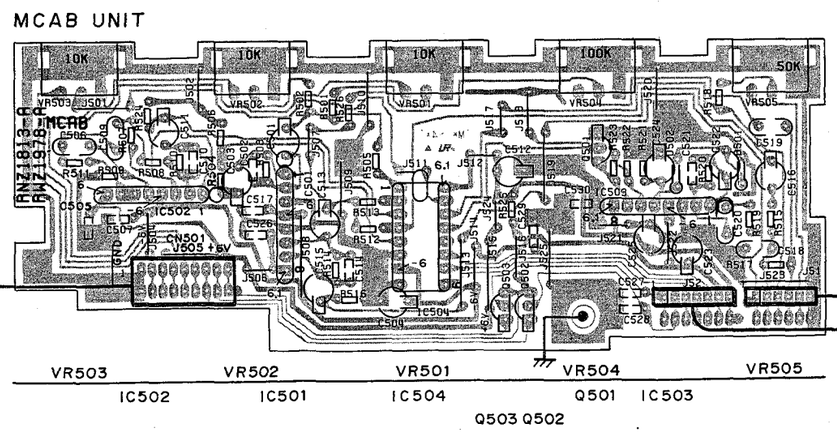
5. SWITCHES (Underline indicates switch position)
   SWLB unit
   S601 : ECHO ON/OFF
   S602 : UMAKA ON/OFF
   S603 : WARIKOMI VOCAL ON/OFF
   S604 : ONETOUCH KARAOKE ON/OFF
   S605 : ONTA/STEREO
   S606 : TAPE PLAY/REC
   S607 : HIGH ♯
   S608 : NORMAL
   S609 : LOW ♭
   MAIN unit
   S101 : POWER STANDBY/ON

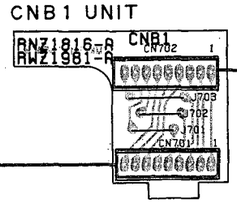
4. P.C. BOARDS CONNECTION DIAGRAM

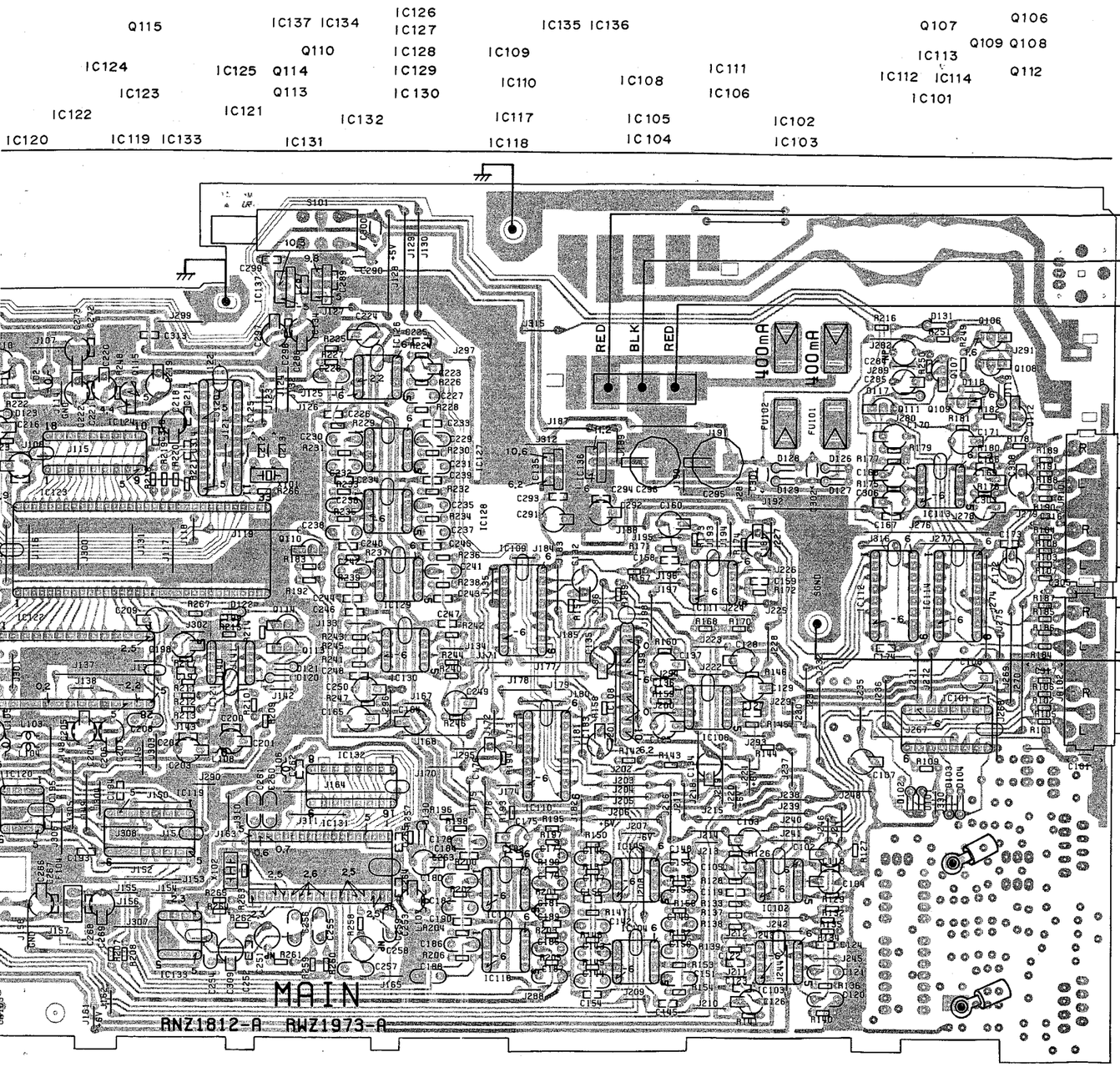


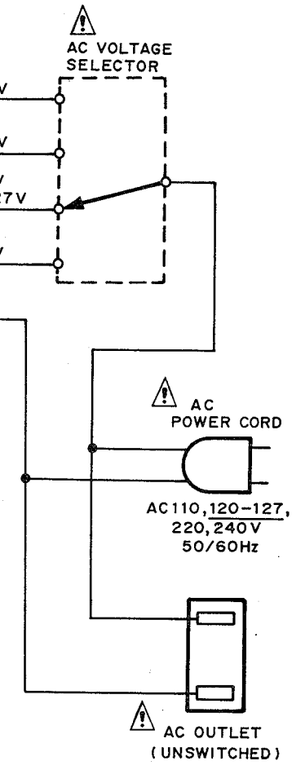






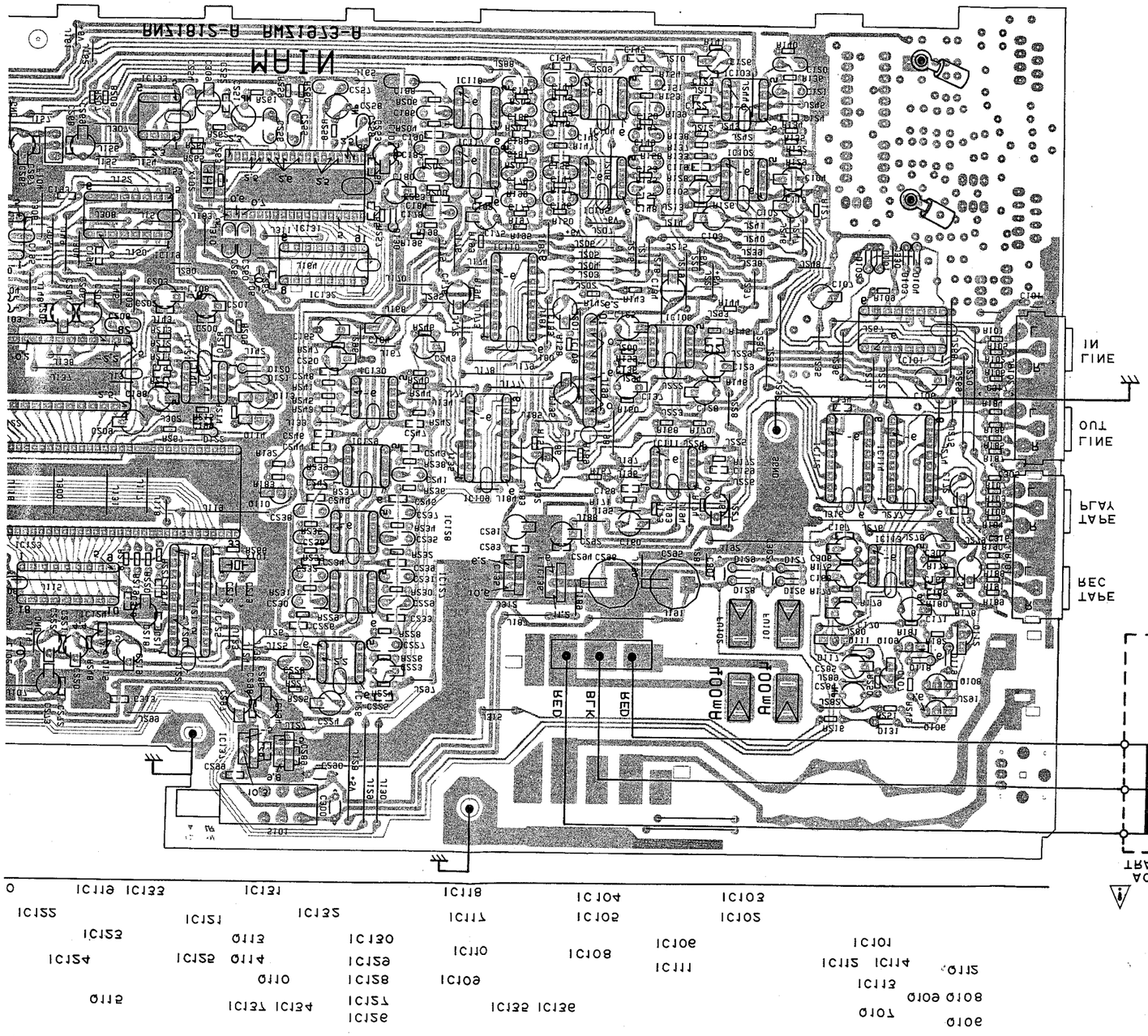


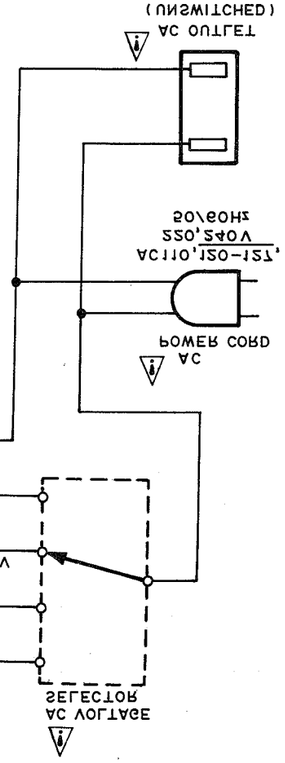




P.C.B. pattern diagram indication	Corresponding part symbol	Part name
		Transistor
		FET
		Diode
		Zenner diode
		LED
		Varactor
		Tact switch
		Inductor
		Coil
		Transformer
		Filter
		Ceramic capacitor
		Mylar capacitor
		Styrol capacitor
		Electrolytic capacitor (Non polarized)
		Electrolytic capacitor (Noiseless)
		Electrolytic capacitor (Polarized)
		Electrolytic capacitor (Polarized)
		Power capacitor
		Semi-fixed resistor
		Resistor array
		Resistor
		Resonator
		Thermistor

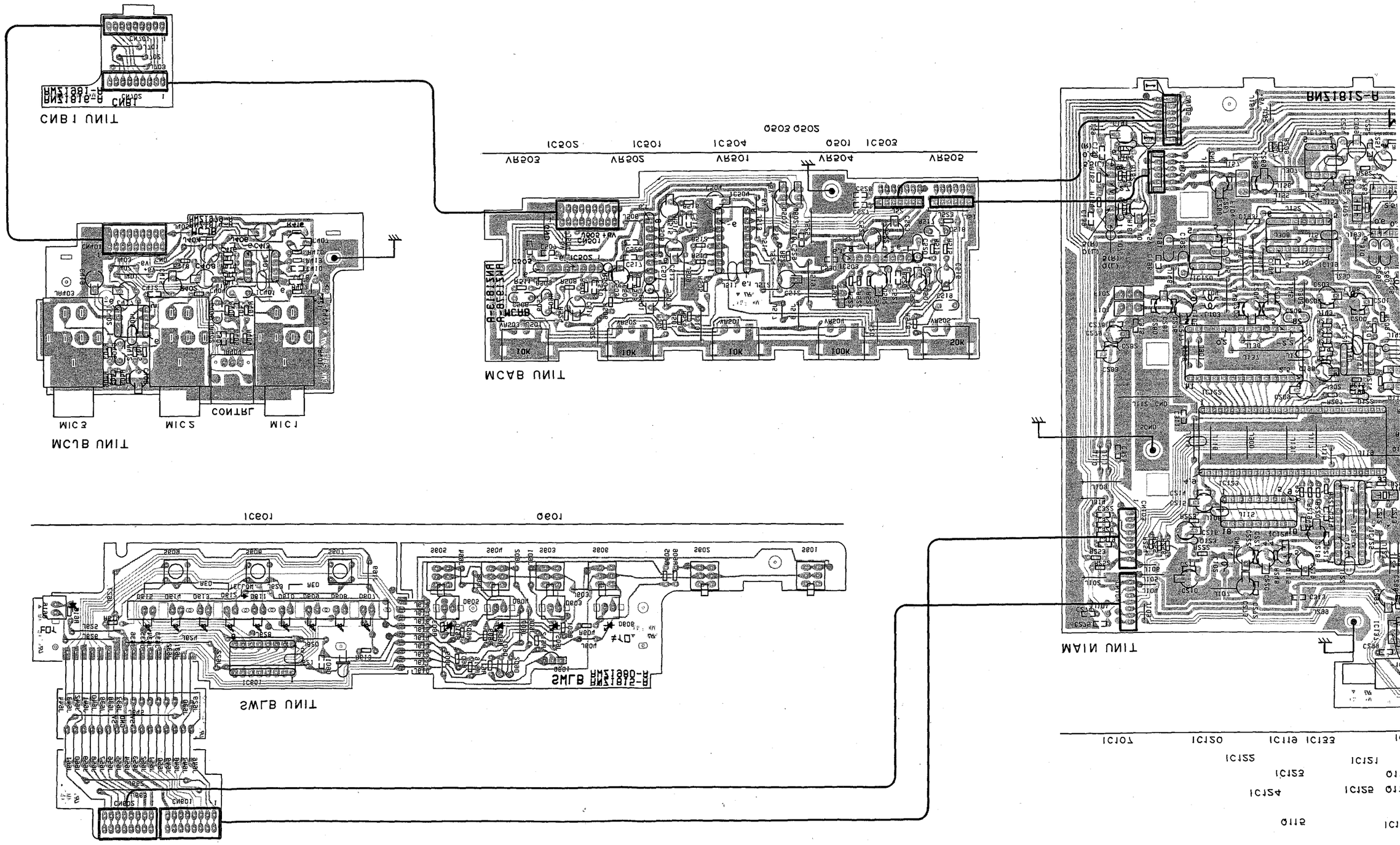
1. This P.C.B. connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the above Table.
3. The capacitor terminal marked with ▭ shows negative terminal.
4. The diode marked with O shows cathode side.
5. The transistor terminal marked with ▭ shows emitter.


IN
LINE
OUT
LINE
PLAY
TAPE
REC
TAPE
RED
BLK
RED
AM00
AM00

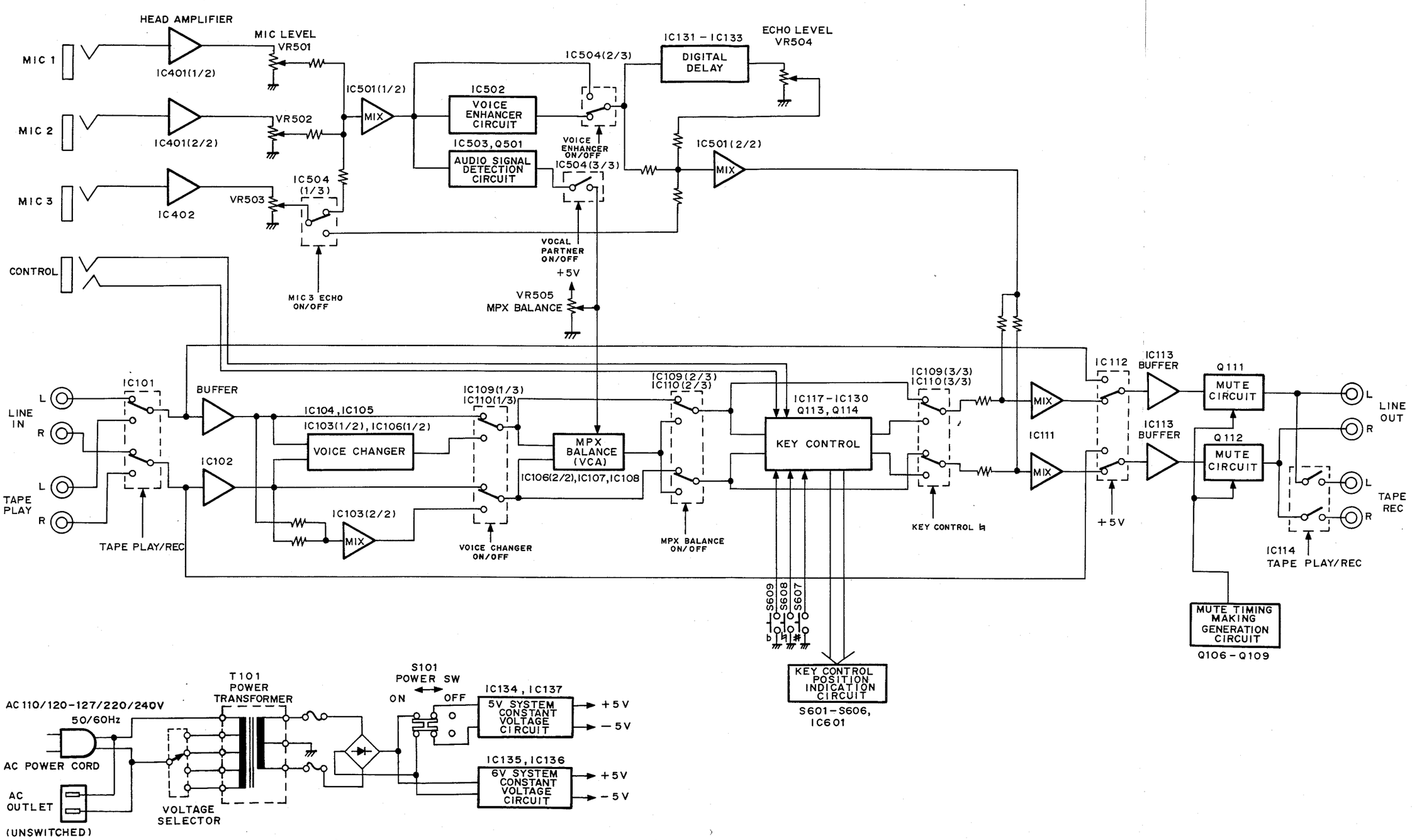

(UNSWITCHED)
AC OUTLET
POWER CORD
AC
VO
V117
V127
V234
V103
V220
V240
TRANSFORMER
AC POWER
SELECTOR
AC VOLTAGE

A. P.C. BOARDS CONNECTION DIAGRAM

This P.C.B. connection diagram is viewed from the foil side.



5. BLOCK DIAGRAM



6. P.C.B's PARTS LIST

NOTES:

- Parts without part number cannot be supplied.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.
- The ⚠ mark found on some component parts indicates the impotance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- When ordering resistors, first convert resistance values into code form as shown in the following examples.

Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%)

560 Ω → 56 × 10^1 → 561 ····· RD1/4PS 5 6 1 J
47k Ω → 47 × 10^3 → 473 ····· RD1/4PS 4 7 3 J
0.5 Ω → 0R5 ····· RN2H 0 R 5 K
1 Ω → 010 ····· RS1P 0 1 0 K

Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62k Ω → 562 × 10^1 → 5621 ····· RN1/4SR 5 6 2 1 F

Mark	No.	Symbol & Description	Part No.
MAIN UNIT			
SEMICONDUCTORS			
		IC101	NJU4052BD
		IC102-106	BA15218
		IC107	BA15218N
		IC108	M5207L05
		IC109, 110	NJU4053BD
		IC111	BA15218
		IC112	NJU4053BD
		IC113	BA15218
		IC114	NJU4053BD
		IC117, 118	BA15218
		IC119	NJU4053BD
		IC120	BA15218
		IC121	NJM360D
		IC122	PCM54HP
		IC123	PD0046
		IC124	MB81464-12P
		IC125 D/A CONVERTER	LC7881-C
		IC126-130	BA15218
		IC131	M50195P
		IC132	M5K4164AP-15
		IC133	IR9393
⚠		IC134 REGULATOR IC	NJM78M05FA
⚠		IC135 REGULATOR IC	NJM78M06FA
⚠		IC136 REGULATOR IC	NJM79M06FA
⚠		IC137 REGULATOR IC	NJM79M05FA
		Q106, 107 TRANSISTOR	XDC124ES
		Q108, 109 TRANSISTOR	XDA124ES
		Q110 TRANSISTOR	XDC124ES
		Q111, 112 TRANSISTOR	2SD1302
		Q113, 114 TRANSISTOR	2SC2058S
		Q115 TRANSISTOR	2SC1740S
		D101-104 DIODE	1SS254
		D117-125 DIODE	1SS254
⚠		D126-129 DIODE	1SR139-100
		D130 DIODE	1SS254
		D131	MTZ6.8B

Mark	No.	Symbol & Description	Part No.
SWITCH			
⚠		S101	RSG1028
COILS/FILTERS			
		L102-108	LAU2R2M
		F101, 102 FILTER	VTH1012
		F104 FILTER	VTH1012
CAPACITORS			
		C101 CERAMIC CAPACITOR	CKCYF473Z50
		C102-105 ELECTR. CAPACITOR	CEAS100M50
		C106, 107 ELECTR. CAPACITOR	CEAS101M10
		C118, 119	CKPUYF223Z25
		C120, 121 MYLOR FILM CAPACITOR	CQMA222J50
		C122	CKPUYB331K50
		C123, 124	CKPUYF223Z25
		C125 ELECTR. CAPACITOR	CEAS101M10
		C126 ELECTR. CAPACITOR	CEAS100M50
		C127	CKPUYB331K50
		C128 ELECTR. CAPACITOR	CEAS100M50
		C129 ELECTR. CAPACITOR	CEAS101M10
		C132, 133 ELECTR. CAPACITOR	CEAS100M50
		C134, 135 ELECTR. CAPACITOR	CEAS101M10
		C136 AXIAL CAPACITOR	CKPUYB101K50
		C137 ELECTR. CAPACITOR	CEAS100M50
		C138, 139	CKPUYF223Z25
		C140, 141 ELECTR. CAPACITOR	CEAS100M50
		C142 MYLOR FILM CAPACITOR	CQMA393J50
		C143 MYLOR FILM CAPACITOR	CQMA104J50
		C144 MYLOR FILM CAPACITOR	CQMA272J50
		C145	CKPUYF223Z25
		C146 MYLOR FILM CAPACITOR	CQMA124J50
		C147 MYLOR FILM CAPACITOR	CQMA102J50
		C148	CKPUYF223Z25
		C149-153 MYLOR FILM CAPACITOR	CQMA472J50
		C154, 155	CKPUYF223Z25
		C158, 159 AXIAL CAPACITOR	CKPUYB101K50
		C160, 161 ELECTR. CAPACITOR	CEAS100M50
		C164, 165 ELECTR. CAPACITOR	CEAS101M10

Mark	No.	Symbol & Description	Part No.
		C166, 167	CKPUYF223Z25
		C168-172 ELECTR. CAPACITOR	CEAS100M50
		C173, 174	CKPUYF223Z25
		C175, 176 ELECTR. CAPACITOR	CEAS100M50
		C177, 178 MYLOR FILM CAPACITOR	CQMA103J50
		C179, 180 MYLOR FILM CAPACITOR	CQMA223J50
		C181, 182 MYLOR FILM CAPACITOR	CQMA152J50
		C183, 184	CKPUYF223Z25
		C185, 186 MYLOR FILM CAPACITOR	CQMA333J50
		C187, 188 MYLOR FILM CAPACITOR	CQMA561J50
		C189, 190	CKPUYF223Z25
		C191, 192 MYLOR FILM CAPACITOR	CQMA102J50
		C193-197	CKPUYF223Z25
		C198 ELECTR. CAPACITOR	CEAS101M10
		C199	CCPUSL220J50
		C200	CKPUYF223Z25
		C201 ELECTR. CAPACITOR	CEAS101M10
		C202	CKPUYF223Z25
		C203, 204 ELECTR. CAPACITOR	CEAS101M10
		C205, 206	CKPUYF223Z25
		C207 ELECTR. CAPACITOR	CEAS101M10
		C208 MYLOR FILM CAPACITOR	CQMA563J50
		C209 ELECTR. CAPACITOR	CEAS100M50
		C210 ELECTR. CAPACITOR	CEAS101M10
		C211	CKPUYY103N16
		C212 CERAMIC CAPACITOR	CCCCH270J50
		C213 CERAMIC CAPACITOR	CCCCH220J50
		C214	CKPUYY103N16
		C215 ELECTR. CAPACITOR	CEAS101M10
		C216 ELECTR. CAPACITOR	CEAS100M50
		C217	CKPUYY103N16
		C218-220 ELECTR. CAPACITOR	CEAS101M10
		C221	CKPUYF223Z25
		C222 ELECTR. CAPACITOR	CEAS101M10
		C223, 224 ELECTR. CAPACITOR	CEAS010M50
		C225, 226	CKPUYF223Z25
		C227, 228 MYLOR FILM CAPACITOR	CQMA153J50
		C229, 230 MYLOR FILM CAPACITOR	CQMA273J50
		C231, 232 MYLOR FILM CAPACITOR	CQMA222J50
		C233, 234	CKPUYF223Z25
		C235, 236 MYLOR FILM CAPACITOR	CQMA223J50
		C237, 238 MYLOR FILM CAPACITOR	CQMA122J50
		C239, 240	CKPUYF223Z25
		C241, 242 MYLOR FILM CAPACITOR	CQMA563J50
		C243, 244	CKPUYB331K50
		C245-248	CKPUYF223Z25
		C249, 250 ELECTR. CAPACITOR	CEAS010M50
		C251	CEANP4R7M16
		C252	CCPUSL220J50
		C253 ELECTR. CAPACITOR	CEAS101M10
		C254 MYLOR FILM CAPACITOR	CQMA272J50
		C255 MYLOR FILM CAPACITOR	CQMA102J50
		C256, 257 MYLOR FILM CAPACITOR	CQMA104J50
		C258 ELECTR. CAPACITOR	CEANPR47M50
		C259 MYLOR FILM CAPACITOR	CQMA472J50

Mark	No.	Symbol & Description	Part No.
		C260, 261 MYLOR FILM CAPACITOR	CQMA563J50
		C262	CKPUYY103N16
		C263 ELECTR. CAPACITOR	CEAS100M50
		C264, 265	CKPUYY103N16
		C266 ELECTR. CAPACITOR	CEAS101M10
		C267, 268	CKPUYF223Z25
		C269 ELECTR. CAPACITOR	CEAS101M10
		C272	CKPUYF223Z25
		C273 ELECTR. CAPACITOR	CEAS101M10
		C274-276	CKPUYF223Z25
		C277 ELECTR. CAPACITOR	CEAS101M10
		C278	CKPUYF223Z25
		C279 ELECTR. CAPACITOR	CEAS101M10
		C280	CKPUYF223Z25
		C281 ELECTR. CAPACITOR	CEAS101M10
		C282	CKPUYF223Z25
		C283 ELECTR. CAPACITOR	CEAS101M10
		C284	CEANP4R7M16
		C285 ELECTR. CAPACITOR	CEAS470M16
		C286 ELECTR. CAPACITOR	CEAS101M10
		C287	CKPUYF223Z25
		C289	CKPUYF223Z25
		C290 CERAMIC CAPACITOR	CKCYF103Z50
		C291, 292 ELECTR. CAPACITOR	CEAS101M10
		C293, 294	CKPUYF223Z25
		C295, 296 ELECTR. CAPACITOR	CEAS222M16
		C297 ELECTR. CAPACITOR	CEAS101M10
		C298, 299	CKPUYF223Z25
		C300-302 CERAMIC CAPACITOR	CKCYF103Z50
		C305 CERAMIC CAPACITOR	CKCYF473Z50
		C306-308 ELECTR. CAPACITOR	CEAS100M50
		C309 ELECTR. CAPACITOR	CEAS101M10
		C310, 311	CKPUYY103N16
		C313	CKPUYY103N16
		C314	CCPUSL220J50
		C315	CKPUYY103N16
		C316, 317 CERAMIC CAPACITOR	CKCYF103Z50
		C319-322	CKPUYB102K50
		C323	CKPUYY103N16
RESISTORS			
		R101-109 CARBONFILM RESISTOR	RD1/6PM□□□J
		R126-129 CARBONFILM RESISTOR	RD1/6PM□□□J
		R132-267 CARBONFILM RESISTOR	RD1/6PM□□□J
OTHERS			
		CN103, 104	B8P-MQ
		JA101, 102 JACK	RKB1001
		X101	VSS1015
		X102	RSS1030

Mark	No.	Symbol & Description	Part No.

MCAB UNIT

SEMICONDUCTORS

	IC501-503	BA15218N
	IC504	NJU4053BD
	Q501-503 TRANSISTOR	XDC124ES
	D501, 502 DIODE	1SS254

CAPACITORS

	C501 ELECTR. CAPACITOR	CEAS010M50
	C502 AXIAL CAPACITOR	CKPUYB101K50
	C503 ELECTR. CAPACITOR	CEAS010M50
	C504 ELECTR. CAPACITOR	CEAS101M10
	C505	CKPUYF223Z25
	C506 MYLOR FILM CAPACITOR	CQMA182J50
	C507	CKPUYF223Z25
	C509 MYLOR FILM CAPACITOR	CQMA103J50
	C510	CKPUYB331K50
	C511 ELECTR. CAPACITOR	CEAS010M50
	C512 ELECTR. CAPACITOR	CEAS101M10
	C513 ELECTR. CAPACITOR	CEAS100M50
	C514 AXIAL CAPACITOR	CKPUYB101K50
	C515, 516 ELECTR. CAPACITOR	CEAS010M50
	C517	CKPUYF223Z25
	C518 MYLOR FILM CAPACITOR	CQMA472J50
	C519 MYLOR FILM CAPACITOR	CQMA104J50
	C520 MYLOR FILM CAPACITOR	CQMA103J50
	C521	CKPUYB331K50
	C522 ELECTR. CAPACITOR	CEAS100M50
	C523 ELECTR. CAPACITOR	CEAS101M10
	C524 ELECTR. CAPACITOR	CEAS010M50
	C525 ELECTR. CAPACITOR	CEAS101M10
	C526	CKPUYF223Z25
	C527-530	CKPUYY103N16

RESISTORS

	R501-526 CARBONFILM RESISTOR	RD1/6PM□□□J
	VR501-503(10kB)	RCV1054
	VR504(50kB)	RCV1056
	VR505(100kC)	RCV1055

OTHERS

	CN501	09MQ-ST

MCJB UNIT

SEMICONDUCTORS

	IC401, 402	BA15218

CAPACITORS

	C401-403	CKPUYX222M16
	C404-406 MYLOR FILM CAPACITOR	CQMA563J50
	C407-409 ELECTR. CAPACITOR	CEJA010M50
	C410-412	CKPUYB102K50
	C413-415 ELECTR. CAPACITOR	CEJA010M50
	C416	CKPUYF223Z25
	C417	CEJA470M6R3
	C418	CKPUYF223Z25
	C419	CEJA470M6R3
	C420 CERAMIC CAPACITOR	CKCYF473Z50
	C421 CERAMIC CAPACITOR	CKCYF103Z50

RESISTORS

	R401-418 CARBONFILM RESISTOR	RD1/6PM□□□J

OTHERS

	CN401	09MQ-ST
	JA401-403 MIC JACK	VKN1074
	JA404 MINI JACK	VKN1076

SWLB UNIT

SEMICONDUCTORS

	IC601	SN74LS145N
	Q601 TRANSISTOR	XDC124ES
	D601, 602 DIODE	1SS254
	D603-605	SLH-34VC35H3
	D606	SLH-34YC35H3
	D607-610	SLR-320VC3F
	D611	SLR-320YC3F
	D612-615	SLR-320VC3F
	D616	SLH-34VC35H3

SWITCHES

	S601-606 SWITCH	RSG1032
	S607-609	RSG1010

CAPACITORS

	C601	CKPUYF223Z25

RESISTORS

	R601-616 CARBONFILM RESISTOR	RD1/6PM□□□J

OTHERS

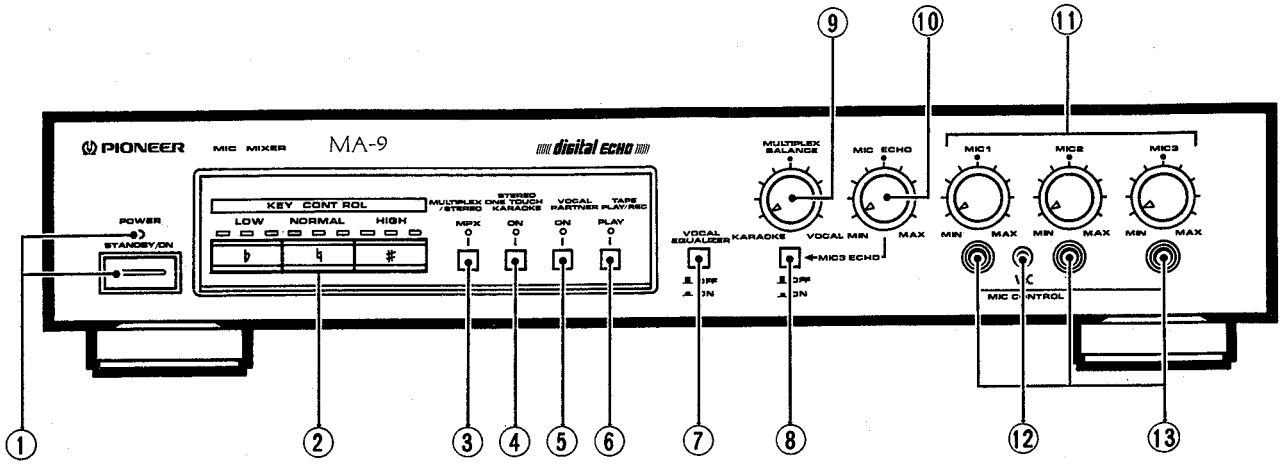
	CN601, 602	08MQ-ST

CNB1 UNIT

OTHERS

	CN701, 702	B9P-MQ

7. PANEL FACILITIES



① POWER switch / indicator

Pressing the switch supplies the power and lights the indicator. Pressing it once again turns off the power and puts out the indicator.

NOTE:
The unit's POWER switch is geared to selecting the transformer's secondary and even at the STANDBY position, the unit's circuitry will work as long as the power cord is connected to power outlet.

② KEY CONTROL button / indicator

♯: Pressing this button once moves the pitch of the music source a half-step higher when it is too low to accompany your vocals. (max. 4 steps)
♮ : Pressing this button returns the pitch to the original level.
♭ : Pressing this button once moves the pitch of the music source a half-step lower when it is too high to accompany your vocals. (max. 4 steps)

③ MULTIPLEX / STEREO button / indicator

To select a multiplex source, press this button to change the mode to multiplex. To select a stereo source, press the button to change the mode to stereo. The indicator lights in the multiplex mode.

④ STEREO ONE TOUCH KARAOKE button / indicator

When an ordinary vocal-recorded stereo source is used, pressing this button converts the source into a multiplex source (the indicator lights), and the MULTIPLEX BALANCE and VOCAL PARTNER functions are available. (The STEREO ONE TOUCH KARAOKE function can be utilized only when the MULTIPLEX / STEREO indicator is not lit.)
This function is not usable for a monaural source.

⑤ Vocal Partner button / indicator

When a multiplex source is played back in the multiplex mode, pressing this button activates the VOCAL PARTNER function. The original vocal is automatically suppressed when you are singing, but it automatically returns to help you if you come to a standstill in the middle of the text.
You can enjoy singing a duet with the original vocals. When an ordinary stereo source is used, pressing the STEREO ONE-TOUCH KARAOKE button and then this button converts the source into a multiplex source for added KARAOKE enjoyment.

⑥ TAPE PLAY / REC button / indicator

Pressing this button plays back a cassette tape on the cassette deck connected to the MA-9. (The indicator lights.) The indicator must remain unlit or you cannot perform tape-recording on a cassette deck.

⑦ Vocal Equalizer button

Pressing this button creates a clear and rich vocal sound over a wide range.

⑧ MIC 3 ECHO button

Pressing this button turns the echo effect ON/OFF only for MIC 3. When using the microphone for a master of ceremonies, you can turn off the echo effect.

⑨ MULTIPLEX BALANCE knob

When a multiplex source is used in the multiplex mode to play KARAOKE, turning this knob controls the volume of the original vocal. Turning it counterclockwise to the end plays back only the music source, and turning it clockwise decreases the volume of the original vocals gradually.

⑩ MIC ECHO knob

Turning this knob clockwise adds echo effects to all the vocals on all microphones.

⑪ MIC VOLUME CONTROL knobs

Turning these knobs adjusts the volume of the microphones connected to the MIC jacks.

⑫ MIC CONTROL jack

When the microphone cum the KEY CONTROL switch (DM-V161) is used, connect its control plugs with this jack. You can change the pitch of the music source using the switch on the microphones at hand.

⑭ MIC jacks

Insert the microphone plugs into these jacks

NOTE:
If plugs are not inserted fully, the microphones do not function.

8. SPECIFICATIONS

INPUT terminals (sensitivity / impedance)
- MIC ..... 1m V / 40 kΩ
- LINE,TAPE ..... 150m V / 50 kΩ

OUTPUT terminals (output level / output impedance)
- LINE, TAPE ..... 150m V / 1 kΩ

SN ratio (EIAJ)
- MIC ..... 72 dB
- LINE, TAPE ..... 85 dB

Microphone maximum allowable input
(1 kHz, distortion factor 1%) ..... 150m V
Echo reverberation time ..... 0 — 1.5 sec
Power supply .....
AC 110 V/120~127 V/220V/240V (switchable), 50/60 Hz
Power Consumption 7W
Spare outlet ..... Power-switch-non-coupling type (Max. 100 W)
Dimensions (W x H x D) ..... 420 x 85 x 336 mm
Weight ..... 3.2 kg

Accessories

Operating instructions x 1
"HOW TO ENJOY KARAOKE" x 1
Connecting cord x 2

NOTE:
Specifications and design subject to possible modification with out notice, due to imposible.